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TRAFFIC IMPACT ANALYSIS SUMMARY
Museum Square
Goldwater Boulevard and Marshall Way
13-ZN-2018
September 2019

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Traffic Impact Study Prepared by Jamie Blakeman, J2 Engineering and Environmental Design

Existing Conditions:

Site Location – The site is located east and north of Goldwater Boulevard, west of Marshall Way, and south of 1st Street, also including the northeast corner of 2nd Street and Marshall Way, the northeast corner of Marshall Way and 1st Street (the proposed Canopy by Hilton development) and the Scottsdale Museum of the West.

Existing Development – The existing site is primarily comprised of at grade parking lots. The 3,632 sf Stagebrush Theatre located on the northeast corner of Goldwater Boulevard and 2nd Street, the 15,002 sq ft Scottsdale Artists' School located on the southwest corner of Marshall Way and 2nd Street, and the 57,806 sq ft Scottsdale Museum of the West located on the west side of Marshall Way at 1st Street is planned to remain. The proposed Canopy by Hilton, located on the northeast corner of Marshall Way and 1st Street, formerly occupied by the Arizona School of Real Estate and Business is also included in the project and a separate traffic study was submitted for the hotel.

Street Classifications –

- Goldwater Boulevard is classified as a couplet.
- Marshall Way is an unclassified local street.
- Scottsdale Road is classified as a Major Collector.
- Main Street is an unclassified local street.
- 1st Street is an unclassified local street.
- 2nd Street is an unclassified local street. This street has been identified as a primary east-west bike route through the area.

Existing Street Conditions –

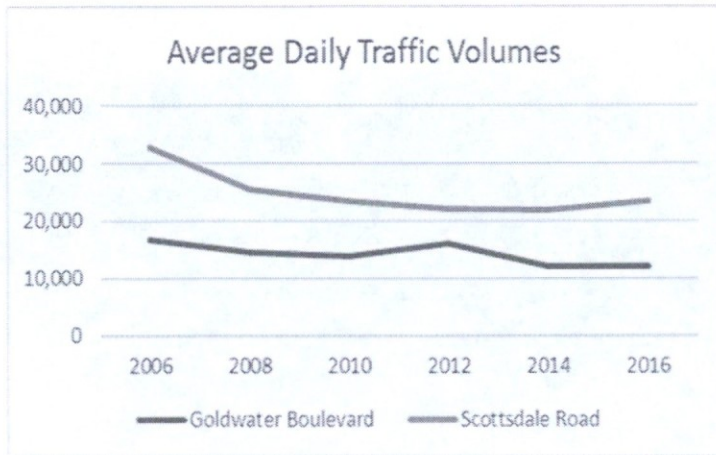
- **Scottsdale Road and 1st Avenue** currently operates as a two-way stop-controlled intersection, with stop control on the eastbound and westbound approaches. The northbound and southbound approaches both provide one dedicated left turn lane, one through lane, and one shared through-right turn lane. The eastbound and westbound approaches both provide one shared left-through-right turn lane.
- **Scottsdale Road and Main Street** currently operates as a signalized intersection. The northbound and southbound approaches both provide one dedicated left turn lane, one through lane, and one shared through-right turn lane. The eastbound and westbound approaches both provide one shared left-through-right turn lane.
- **Scottsdale Road and 1st Street** currently operates as a signalized intersection. The northbound approach provides one dedicated left turn lane, one through lane, and one shared through-right turn lane. The southbound approach provides one dedicated left turn lane, two through lanes, and one dedicated right turn lane. The eastbound and westbound approaches both provide one shared left-through-right turn lane.
- **Scottsdale Road and 2nd Street** currently operates as a signalized intersection. The northbound and southbound approaches each provide one dedicated left turn lane, one through lane, and one shared through-right turn lane. The eastbound approach provides

one dedicated left turn lane, one through lane, and one dedicated right turn lane. The westbound approach provides one shared left-through-right turn lane.

- **Scottsdale Road and Goldwater Boulevard** currently operates as a signalized intersection. The northbound approach (Scottsdale Road) provides one dedicated left turn lane and one shared through-right turn lane. The southbound approach (Scottsdale Road) provides one dedicated left turn lane and one shared left-through-right turn lane. The eastbound approach (Goldwater Boulevard) provides one dedicated left turn lane, two through lanes, and one shared through-right turn lane. The westbound approach (Goldwater Boulevard) provides one dedicated left turn lane, one through lane, and one shared through-right turn lane.
- **Goldwater Boulevard and Main Street** currently operates as a signalized intersection. The northbound approach provides one dedicated left turn lane, one through lane, and one shared through-right turn lane. The southbound approach provides one dedicated left turn lane, two through lanes, and one shared through-right turn lane. The eastbound and westbound approaches both provide one shared left-through-right turn lane.
- **Goldwater Boulevard and 2nd Street** currently operates as a two-way stop-controlled intersection, with stop control on the eastbound and westbound approaches. The northbound approach provides one dedicated left turn lane, one through lane, and one shared through-right turn lane. The southbound approach provides one dedicated left turn lane, two through lanes, and one shared through-right turn lane. The eastbound and westbound approaches each provide one shared left-through-right turn lane.
- **Goldwater Boulevard and 70th Street** currently operates as a one-way stop-controlled T-intersection, with stop control on 70th Street. The northbound approach (Goldwater Boulevard) provides one dedicated left turn lane and two through lanes. The southbound approach provides two through lanes and one shared through-right turn lane. The eastbound approach (70th Street) provides one left turn and one right turn lane.
- **Goldwater Boulevard and Marshall Way** currently operates as a two-way stop-controlled intersection, with stop control on the northbound and southbound approaches. The northbound approach provides one shared left-through-right turn lane. The southbound approach provides one shared left turn-through and one dedicated right turn lane. The eastbound approach provides one dedicated left turn lane, two through lanes, and one shared through-right turn lane. The westbound approach provides one dedicated left turn lane, one through lane, and one shared through-right turn lane.
- **Marshall Way and 2nd Street** currently operates as a four-way stop controlled intersection. All approaches provide one shared left-through-right turn lane.

Existing and Historic Volumes –

- Most current (2016) ADT on Goldwater Boulevard between Indian School Road and Osborn Road is 12,000 vehicles per day.
- Most current (2016) ADT on Scottsdale Road between Indian School Road and Osborn Road is 23,500 vehicles per day.



Bi-Annual ADT		
Year	Goldwater Boulevard	Scottsdale Road
2006	16,800	32,800
2008	14,500	25,400
2010	13,800	23,400
2012	16,100	22,200
2014	12,000	21,800
2016	12,000	23,500

Existing Speed Limits –

- Goldwater Boulevard: 35 mph.
- Marshall Way: 25 mph.
- Scottsdale Road: 25 mph.
- Main Street: 25 mph.
- 1st Street: 25 mph.
- 2nd Street: 25 mph.

Area Intersection Crash Summary – The 3-year crash history for intersections near the project is summarized in the table below. The data covers the 3 years from April 2015 to April 2018.

3-Year Crash History Ending April 2018			
Intersection		No. of Crashes	No. of Injuries
Scottsdale Road	& 1st Avenue	15	1
Scottsdale Road	& Main Street	17	3
Scottsdale Road	& 1st Street	7	0
Scottsdale Road	& 2nd Street	13	1
Scottsdale Road	& Goldwater Boulevard	27	1
Goldwater Boulevard	& Main Street	8	2
Goldwater Boulevard	& 1st Street	3	1
Goldwater Boulevard	& 2nd Street	32	8
Goldwater Boulevard	& 70th Street	2	0
Goldwater Boulevard	& Marshall Way	1	1
Marshall Way	& Main Street	3	1
Marshall Way	& 1st Street	1	0
Marshall Way	& 2nd Street	2	1

Proposed Development:

Description – The proposed Museum Square development will be comprised of the following land uses:

- **Residential Building #1**

The proposed eleven-story Residential Building #1 will be located on the southeast corner of Goldwater Boulevard and 2nd Street and will include:

- 61 residential units
 - 17 one-bedroom units
 - 31 two-bedroom units
 - 13 three-bedroom units

The main access to the underground parking garage will be at the entry courtyard located on 2nd Street approximately 300 feet west of Marshall Way. A secondary access will be provided along Marshall Way (approximately 340 feet south of 2nd Street) just south of the Scottsdale Artists' School).

- **Residential Building #2**

The proposed thirteen-story Residential Building #2 building will be located northeast of the intersection of Goldwater Boulevard and 70th Street and will include:

- 83 residential units
 - 27 one-bedroom units
 - 38 two-bedroom units
 - 18 three-bedroom units

Similar to Residential Building #1, the main access to the underground parking garage will be at the entry courtyard located on 2nd Street approximately 300 feet west of Marshall Way. A secondary access will be provided along Marshall Way (approximately 340 feet south of 2nd Street) just south of the Scottsdale Artists' School.

- **Residential Building #3**

The proposed twelve-story Residential Building #3 will be located on the northwest corner of Goldwater Boulevard and Marshall Way and will include:

- 110 residential units
 - 71 one-bedroom units
 - 39 two-bedroom units

The main access to the underground parking garage will be located along Marshall Way (approximately 340 feet south of 2nd Street) just south of the Scottsdale Artist School. A secondary access will be located at the entry courtyard located off 2nd Street approximately 300 feet west of Marshall Way.

- **Residential Building #4**

The proposed Apartment/Condo Complex will be located on the northeast corner of Marshall Way and 2nd Street and will include:

- 92 residential units
 - 58 one-bedroom units
 - 34 two-bedroom units

The main access to the underground parking garage will be provided along 1st Street approximately 100 feet east of Marshall Way.

- **Hotel**

The proposed thirteen-story Hotel will be located in the northwest corner of 2nd Street and Marshall Way. The proposed Hotel will include:

- 190 keys
- 7,000 – 8,000 sq ft of conference/meeting space
- A spa consisting of four treatment rooms
- A fitness center
- 5,000 – 6,000 sq ft of restaurant space

The access to the Hotel will be located at the entry courtyard located along 2nd Street approximately 300 feet west of Marshall Way. The Hotel drop-off will be located along 2nd Street approximately 220 feet west of Marshall Way.

- **Scottsdale Museum of the West**

A 22,500 sq ft expansion of the Scottsdale Museum of the West is anticipated in the future and is included in this traffic analysis.

- **Canopy By Hilton**

Located on the northeast corner of Marshall Way and 1st Street. This development is comprised of a 176-room hotel with a fitness center, pool and spa, café, bar, and 4,130 sq ft of conference/meeting space. A separate TIMA was completed for the hotel.

Situated within the proposed development are the 3,632 sq ft Stagebrush Theatre located on the northeast corner of Goldwater Boulevard and 2nd Street; the 15,002 sq ft Scottsdale Artists' School located on the southwest corner of Marshall Way and 2nd Street; and the 57,806 sq ft Scottsdale Museum of the West located on the west side of Marshall Way at 1st Street which are all planned to remain.

Site Access – The Museum Square development will include four proposed access points; one along 1st Street, two along 2nd Street, and one along Marshall Way.

- **Driveway F** and 1st Street is located approximately 100 feet east of Marshall Way. The proposed driveway will form a T-intersection and will be a full access driveway allowing all movements into and out of the site. The driveway will allow for access to an underground parking garage for residents of Residential Building #4.
- **Driveway C** and 2nd Street is located approximately 300 feet west of Marshall Way. This driveway will provide access to a surface parking lot to the north as well as to the 190-key hotel. Additionally, this driveway will provide access to Residential Buildings #1, #2, and #3, and to the Scottsdale Artists' School to the south. This will be a full access driveway allowing all movements into and out of the site.
- **Driveway D** and 2nd Street is located approximately 220 feet west of Marshall Way. This driveway will provide access to the Hotel drop-off.
- **Marshall Way and Driveway E** is located approximately 340 feet south of 2nd Street. This driveway will provide access to Residential Buildings #1, #2, and #3, and to the Scottsdale Artists' School. This driveway forms a t-intersection and will be a full access driveway allowing all movements into and out of the site.

Estimated Trip Generation – The proposed Museum Square development is estimated to generate 3,432 weekday daily trips, 206 during the AM peak hour, and 253 trips during the PM peak hour. The museum is no longer proposed to be expanded and as such no

longer expected to generate additional trips based on square footage. Compared to the Loloma Mixed Use Development, which was previously proposed and approved on the site, the proposed Museum Square project is projected to generate is 916 fewer daily trips, 22 fewer AM peak hour and 194 fewer PM peak hour trips. The comparison is shown in the table, below.

TRIP GENERATION COMPARISON – (Previously Approved Development vs. Proposed):

Land Use	ITE Code	Qty	Unit	Weekday Total	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Low Rise Apartment	221	142	Dwelling Units	1,115	15	58	73	60	31	91
Lofts	221	53	Dwelling Units	659	6	26	32	25	13	38
Artist Studios (Residences)	221	5	Dwelling Units	413	1	4	5	3	2	5
Residential Condo / Townhome	230	53	Dwelling Units	380	5	27	32	25	12	37
Specialty Retail	814	12,815	1000 SF	522	40	43	83	15	19	34
Quality Restaurant	831	2,981	1000 SF	269	1	2	3	15	8	23
Museum	-	20,000	1000 SF	440	0	0	0	19	78	97
Museum Expansion	-	22,500	1000 SF	550	0	0	0	24	98	122
Total – Previously Approved				4,348	69	159	228	186	261	447
Multifamily Housing (Mid-Rise)	221	92	Dwelling Units	500	8	24	32	25	16	41
Multifamily Housing (High-Rise)	222	254	Dwelling Units	1,213	20	64	84	58	37	95
Hotel	310	190	Rooms	1,719	54	36	90	60	57	117
Total - Proposed				3,432	82	124	206	143	110	253
Difference				-916	13	-35	-22	-43	-151	-89

Traffic Analysis:

Intersection Level of Service – The analyses were completed using 2025 as the horizon year and a 1 percent annual increase in volumes to estimate future volumes. The intersection analyses concludes that the trips from the proposed development will have minimal effect on the levels of service for the surrounding intersections, all of which are projected to operate at LOS D or better. The only exceptions are the stop-controlled side street movements at the intersections of Goldwater Boulevard / 70th Street and Scottsdale Road / 1st Avenue. In the PM

peak hour, the side street movements are anticipated to operate at LOS E at both intersections, both with and without the project.

The intersection of Goldwater Boulevard and 2nd Street was analyzed both as a two-way stop-controlled intersection, as it exists today, and assuming the installation of a traffic signal. Without the signal the eastbound movement is projected to be LOS F for both the AM and PM peak hours and the westbound movement is projected to be LOS E for the AM and LOS F for the PM peak hours. With the installation of a traffic signal, the east and west bound movements operate at LOS D and the north and southbound movements operate at LOS A. The signal is also anticipated to improve the LOS for the north and south bound left turn movements from LOS B to LOS A. The analysis indicates that installing a signal will decrease overall vehicular delay at the intersection.

Additional Traffic Information:

Goldwater Boulevard and 2nd Street has had a total of 28 angle-type collisions (assumed to be correctable with a traffic signal) between April 2015 to April 2018. 12 angle crashes occurred between April 2015 and April 2016, 12 occurred between April 2016 and April 2017, and 4 occurred between April 2017 and April 2018. The Manual of Uniform Traffic Control Devices Section 4C.08.B under the traffic signal warrant section, indicates that based on crash experience, "the need for a traffic control signal shall be considered if... five or more reported crashes, of types susceptible to correction by a traffic control signal, have occurred within a 12-month period, each crash involving personal injury or property damage..." While a formal traffic signal warrant analysis study was not included as part of this study, the data suggests that the crash experience warrant is met for two of the three years analyzed.

In addition, with the introduction of significant residential development and hotels in the area, the number of pedestrians and bikes using the Goldwater/2nd Street intersection is expected to increase. A signal at the intersection would provide for increased predictability for non-motorized crossings and reduce the number of potential conflicts with vehicles.

The development is generally anticipated to increase the number of people walking and biking in the project area, increasing demand for non-motorized connections across Goldwater Boulevard. The signal at Goldwater and 2nd Street will provide a convenient and safe place to cross at the northern end of the development. To serve non-motorized demand south of the 2nd Street crossing, the development will cost-share with an adjacent development to install a pedestrian hybrid beacon crossing on Goldwater between 70th Street and Marshall Way.

Observations:

Traffic Engineering staff made observations of traffic on the streets near the site during peak traffic periods. It was noted that there are a small number of pedestrians that cross Goldwater between 2nd Street and Marshall Way. No other remarkable traffic operational patterns or concerns were observed.

Additional Information:

Installation of a signal at Goldwater Boulevard and 2nd Street is recommended. Staff also recommends installing a pedestrian crossing to include a pedestrian hybrid beacon between 70th Street and Marshall Way. Existing signal timing splits and offsets should be updated once the project is constructed to efficiently service future traffic patterns.

Summary:

The proposed Museum Square development is estimated to generate 3,432 weekday daily trips, 206 during the AM peak hour, and 253 trips during the PM peak hour. The museum is no longer proposed to be expanded and as such no longer expected to generate additional trips based on square footage. Compared to the Loloma Mixed Use Development, which was previously proposed and approved on the site, the proposed Museum Square project is projected to generate is 916 fewer daily trips, 22 fewer AM peak hour and 194 fewer PM peak hour trips.

The Museum Square development is anticipated to generally increase the number of people walking and biking in the surrounding area, as new residents and hotel guests take advantage of nearby services, restaurants, shopping and recreational/educational opportunities. The estimated increase in vehicular trips is not anticipated to cause the levels of service at adjacent intersections to degrade below LOS D with the exception of the side street movements at Goldwater/70th and Scottsdale/1st Ave in the PM peak hour, both of which are stop controlled at the minor street, and both of which have side street movements that operate at LOS E, with and without the project.

The intersection of Goldwater/2nd Street currently operates with 2-way stop control that is proposed to be replaced with signal control. With two-way stop control, the eastbound movement is projected to be LOS F for both the AM and PM peak hours and the westbound movement is projected to be LOS E for the AM and LOS F for the PM peak hours. With the installation of a traffic signal, the east and west bound movements operate at LOS D and the north and southbound movements operate at LOS A.

Staff recommends, and the applicant has generally agreed to the following improvements to mitigate traffic concerns:

1. If not completed by the City prior, the development will install a traffic signal at the intersection of Goldwater Boulevard and 2nd Street to be operational concurrent with the completion of any phase of the proposed development. The signal should include bike detection.
2. The applicant will participate financially to cause the installation of a marked pedestrian crossing across Goldwater Boulevard between 70th Street and Marshall Way. The pedestrian crossing will include a pedestrian hybrid beacon (or similar device) as approved by the Transportation Department.

With the recommended transportation improvements, the proposed Museum Square development will have its impacts to the adjacent transportation network mitigated by proposed improvements and will increase non-motorized crossing opportunities with a signal at Goldwater Boulevard and 2nd Street and a crossing with a pedestrian hybrid beacon across Goldwater Boulevard between 70th Street and Marshall Way.